

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 4, 7-11, 13-17, and 19-25 are pending in the present application. Claims 4, 7, 8, and 16 are amended by the present amendment.

In the outstanding Office Action, Claims 8-11, 13-15, and 22-25 were rejected under 35 U.S.C. § 112, second paragraph; Claims 8, 16, 17, and 19-22 were rejected under 35 U.S.C. § 102(e) as anticipated by Theil (U.S. Patent No. 6,373,117); Claims 8 and 11 were rejected under 35 U.S.C. § 102(e) as anticipated by Forrest et al. (U.S. Patent No. 6,278,055, herein "Forrest"); Claims 4 and 7 were rejected under 35 U.S.C. § 103(a) as unpatentable over Hayashi et al. (U.S. Patent No. 5,351,209, herein "Hayashi") in view of Forrest; Claims 9, 10, 13, 14, 23, and 24 were rejected under 35 U.S.C. § 103(a) as unpatentable over Theil in view of Hoffmann et al. (U.S. Patent No. 4,724,388, herein "Hoffmann"); Claim 15 was rejected under 35 U.S.C. § 103(a) as unpatentable over Forrest in view of Hayashi; and Claim 25 was rejected under 35 U.S.C. § 103(a) as unpatentable over Forrest in view of Theil.

Applicants respectfully request that this amendment be entered because it places the claims in better form for consideration on appeal by amending the independent claims to clarify how the photodetectors receive light.

Regarding the rejection of Claims 8-11, 13-15, and 22-25 under 35 U.S.C. § 112, second paragraph, independent Claim 8 is amended to provide antecedent basis for each feature as suggested in the outstanding Office Action. No new matter is believed to be added. Accordingly, it is respectfully submitted that this rejection be withdrawn.

Independent Claims 4 and 7 are amended to more clearly recite that a photodetector receives light from outside the photodetector directly on both a first surface of a first

transparent electrode and a second surface of a second transparent electrode, and independent Claims 8 and 16 are amended to recite that a stacked photodetector is configured to receive light from outside the stacked photodetector directly on both a first surface of a first transmission photodetector and a second surface of a second photodetector. The claim amendments find support in the specification, for example at page 15, line 29, to page 16, line 4, and in Figures 3 and 4. No new matter is believed to be added.

Claims 8, 16, 17, and 19-22 were rejected under 35 U.S.C. § 102(e) as anticipated by Theil. That rejection is respectfully traversed.

Briefly recapitulating, amended independent Claim 8 is directed to a stacked photodetector having a first transmission photodetector and a second photodetector stacked on the first transmission photodetector. The stacked photodetector receives light from outside the stacked photodetector directly on a first surface of the first transmission photodetector and a second surface of the second photodetector. Independent Claim 16 has been amended similar to Claim 8.

In a non-limiting example, Figure 17(b) shows the first transmission photodetector 10 and the second photodetector 30 stacked on the first transmission photodetector 10. The stacked photodetector 600 receives light from outside the stacked photodetector directly on both the first surface of layer 23 of the first transmission photodetector 10 and the second surface of layer 43 of the second photodetector 30.

As shown in Figures 19 and 20, the stacked photodetector advantageously receives light 1 from opposite directions and transmits part of the light 1 to other devices for using that light for other purposes.¹

Turning to the applied art, Theil discloses a first photodetector (262, 264, and 266) and a second photodetector (252, 254, and 256) stacked on the first photodetector as shown in

¹ Specification, page 31, line 35, to page 32, line 4.

Figure 2. However, Theil does not teach or suggest that a stacked photodetector receives light from outside the stacked photodetector directly on both a first surface of a first photodetector and a second surface of a second photodetector, as required by independent Claims 8 and 16. To the contrary, Theil shows in Figure 2 a substrate 200 placed on one side of the stacked photodetector and the substrate 200 prevents light from outside the stacked photodetector directly entering the second photodetector.

Accordingly, it is respectfully submitted that independent Claims 8 and 16 and each of the claims depending therefrom patentably distinguish over Theil.

Claims 8 and 11 were rejected under 35 U.S.C. § 103(e) as anticipated by Forrest. That rejection is respectfully traversed.

Forrest discloses in Figure 8B a stacked photodetector having a first photodetector 80Xd and a second photodetector 80Xc stacked on the first photodetector. Both the first and second photodetectors are formed on a substrate 801 that prevents light from outside the stacked photodetector entering from the substrate side to directly reach the first or the second photodetector. Therefore, Forrest does not teach or suggest a stacked photodetector that receives light from outside the stacked photodetector directly on both a first surface of a first photodetector and a second surface of a second photodetector, as required by independent Claims 8 and 16.

Accordingly, it is respectfully submitted that independent Claim 8 and dependent Claim 11 patentably distinguish over Forrest.

Claims 4 and 7 were rejected under 35 U.S.C. § 103(a) as unpatentable over Hayashi in view of Forrest. That rejection is respectfully traversed.

Independent Claim 4 is directed to a transmission photodetector having a first transparent electrode, a second transparent electrode, and a photoelectric transfer part

sandwiched between the first and second transparent electrodes. The transmission photodetector receives light from outside the photodetector directly on both a first surface of the first transparent electrode and a second surface of the second transparent electrode.

Independent Claim 7 has been amended similar to independent Claim 4.

In a non-limiting example, Figure 1A shows the first transparent electrode 1004, the second transparent electrode 1006 and 1007, and the photoelectric transfer part 1005. Further, in another non-limiting example, Figure 3 shows that the transmission photodetector receives light from outside the photodetector directly on both the first surface of the first transparent electrode 1004 and the second surface of the second transparent electrode 1006 and 1002.

Hayashi shows in Figure 3A a photodetector having a substrate 10A, a first transparent electrode 10B, a second transparent electrode 10E, and photoelectric transfer parts 10D and 10C. Hayashi is silent whether light passes the photoelectric transfer parts 10D and C. Further, Figure 6 of Hayashi suggests the contrary because it shows light I_s activating an upper structure of the photodetector and light I_d activating a lower structure of the photodetector, but no light is shown to be transmitted through the photodetector. Therefore, Hayashi does not teach or suggest that a photodetector receives light from outside the photodetector directly on both a first surface of a first transparent electrode and a second surface of a second transparent electrode, as required in independent Claims 4 and 7. Hayashi only discloses that light could be received on either side of the photodetector, but no light passes through the photodetector as requested in Claims 4 and 7.

Forrest has been discussed above and also does not teach or suggest the features of independent Claims 4 and 7 that lack in Hayashi. Accordingly, it is respectfully submitted

that independent Claims 4 and 7 and each of the claims depending therefrom patentably distinguish over Hayashi and Forrest.

Claims 9, 10, 13, 14, 23, and 24 were rejected under 35 U.S.C. § 103(a) as unpatentable over Theil in view of Hoffman. That rejection is respectfully traversed.

The outstanding Office Action relies on Hoffman for teaching a photoelectric transfer element having various parts as recited in Claims 9 and 10. However, Hoffman does not cure the deficiencies of Theil as discussed above. In addition, Claims 9, 10, 13, 14, 23, and 24 depend on independent Claims 8 and 16, which are believed to be allowable as noted above. Accordingly, it is respectfully submitted that Claims 9, 10, 13, 14, 23, and 24 are also allowable.

Claim 15 was rejected under 35 U.S.C. § 103(a) as unpatentable over Forrest in view of Hayashi. That rejection is respectfully traversed.

Neither Forrest nor Hayashi teaches or suggests the features of independent Claim 8, as discussed above. Because Claim 15 depends indirectly on independent Claim 8, which is believed to be allowable as noted above, it is respectfully submitted that Claim 15 is also allowable.

Claim 25 was rejected under 35 U.S.C. § 103(a) as unpatentable over Forrest in view of Theil. That rejection is respectfully traversed.

Neither Forrest nor Theil teaches or suggests the features of Claim 8, as discussed above. Because Claim 25 depends indirectly on independent Claim 8, which is believed to be allowable as noted above, it is respectfully submitted that Claim 25 is also allowable.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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